

# PATENT SPECIFICATION

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## (54) A LAWN MOWER SUPPORTED BY MEANS OF AN AIR CUSHION WHEN IN OPERATION

(71) We, FLYMO SOCIÉTÉ ANONYME, of Alpenstrasse 12, 63 00 Zug, Switzerland, a Swiss Company, do hereby declare the invention, for which we pray that a patent may be granted to us, and the method by which it is to be performed, to be particularly described in and by the following statement:—

This invention relates to a lawn mower of the kind which is supported by means of an air cushion when in operation, and which has an internal combustion engine.

It is a general experience that the conventional air filter of an internal combustion engine used in a lawn mower can rapidly become clogged if the mower is used in dry, dusty surroundings, and it has been common practice to use a so-called "schnorkel" device — i.e. a hose connecting the carburettor housing air inlet with an air intake opening located at the top of the handle of the mower. Thus the induction air for the engine is supplied from a location in which the air generally is less polluted with dust than the air near the carburettor.

It has been proposed to clean induction air for the engine of a lawn mower of the kind referred to by using an air duct which withdraws induction air for the engine from the flow of air used for the air cushion support. The induction air is withdrawn at a sharp flow bend, thus avoiding particles which by inertia will remain in the greater supporting flow of air. This arrangement is often inadequate, so that it has been preferred to use the hose referred to above.

An object of the invention is to provide a device for cleaning the induction air whilst avoiding use of a hose.

According to this invention there is provided a lawn mower of the kind referred to, wherein a device for cleaning induction air for the engine comprises a

cylindrical chamber having a plurality of tangential air inlet openings, an induction tube extending coaxially into the chamber, and a filter element, the chamber having an outlet remote from the inlet openings 50 and from the inlet to the induction tube, the outlet being in communication through a duct with a position adjacent an air inlet port in a housing of the mower, whereby in operation air enters the chamber 55 through the tangential air inlet openings and is caused to rotate within the chamber so that the air is partially cleaned as in a cyclone separator, a portion of the partially cleaned air passes through the induction 60 tube and the filter element to the engine, and particle-laden air passes from the chamber through the outlet and duct to the air inlet port to the air cushion.

The invention will now be described in more detail by way of example, with reference to the drawing, in which:—

Figure 1 is a vertical section; and

Figure 2 is a section on plane II-II of Figure 1.

Referring to the drawing, a lawn mower of the kind referred to has an internal combustion engine with a carburettor 1. The engine is fixed by means not shown on a mower housing 2. The housing 2 contains an air impeller wheel 3 for sucking air through air inlet ports 4 located at the top of the housing 2, one inlet port 4 being seen in Figure 1.

The carburettor 1 carries a filter housing 5 in which is a porous filter element 6. A further housing comprising an induction tube 7 engages the filter element 6 and is connected to the filter housing 5, the induction tube 7 extending co-axially into a cylindrical chamber 8 formed within a wall of the further housing. As Figure 1 shows, the induction tube 7 diverges in a direction towards the filter element 6. The cylindrical chamber 8 has four tangential air

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inlet slots 9.

The further housing has an outlet 10 remote from the inlet slots 9 and from the entrance to the induction tube 7. The filter housing 5 has an integral duct 11 for establishing communication between the outlet 10 and a position adjacent to the air inlet port 4.

The mower operates as follows:—

10 During running of the engine the impeller wheel 3 will cause a substantial air flow downwards through the inlet port 4. A great portion of this air flow will be sucked through the outlet 10, having entered the chamber 8 through the inlet slots 9.

Induction air will be sucked through the induction tube 7, the filter element 6, and the filter housing 5 into the carburettor 1.

20 This induction air is much smaller in amount than the amount of particle-laden air passing through the outlet 10 during the same time interval. All the air entering the chamber 8 will be sucked via the slots 9 into the chamber 8. Due to the tangential direction of the slots 9, the air in the chamber 8 will form a vortex and become partially cleaned as in a cyclone separator, the vortex containing cleaner air in its central portions and more dust particles in its outer portions. Cleaner air will thus be drawn into the induction tube 7 and the engine, whilst most of the particles will pass with the flow of air to the impeller 3.

25 30 Tests have indicated that a mower in accordance with the invention can, under severe conditions, permit extension of the time interval between cleaning the filter element 6 more than five times compared with such interval under similar conditions using a known air cleaner. This improvement has in some cases made it possible to dispense with a "schnorkel" device, which is more expensive.

35 40 On removal of the further housing comprising the induction tube 7 and the wall

around the chamber 8 the filter element 6 is readily accessible for cleaning and coating with oil, which is normal practice with a lawn mower engine.

WHAT WE CLAIM IS:—

1. A lawn mower of the kind referred to, wherein a device for cleaning induction air for the engine comprises a cylindrical chamber having a plurality of tangential air inlet openings, an induction tube extending co-axially into the chamber, and a filter element, the chamber having an outlet remote from the inlet openings and from the inlet to the induction tube, the outlet being in communication through a duct with a position adjacent an air inlet port in a housing of the mower, whereby in operation air enters the chamber through the tangential air inlet openings and is caused to rotate within the chamber so that the air is partially cleaned as in a cyclone separator, a portion of the partially cleaned air passes through the induction tube and the filter element to the engine, and particle-laden air passes from the chamber through the outlet and duct to the air inlet port to the air cushion.

2. A mower according to claim 1, wherein the induction tube is integral with a wall of the cylindrical chamber.

3. A mower according to claim 1 or claim 2, wherein the induction tube diverges in a direction towards the filter element.

4. A mower according to any preceding claim, wherein the duct is integral with a housing for retaining the filter element.

5. A lawn mower of the kind referred to and constructed and arranged substantially as herein described and shown in the drawing.

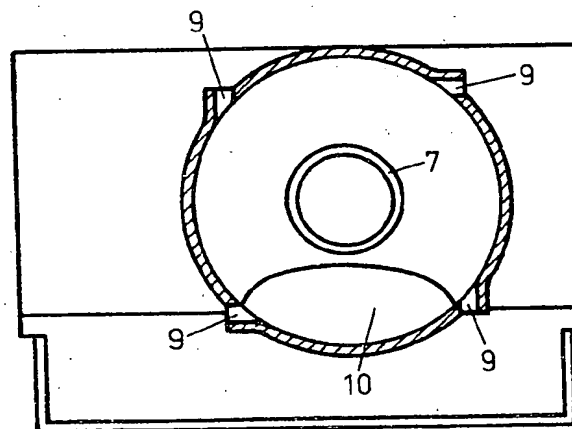
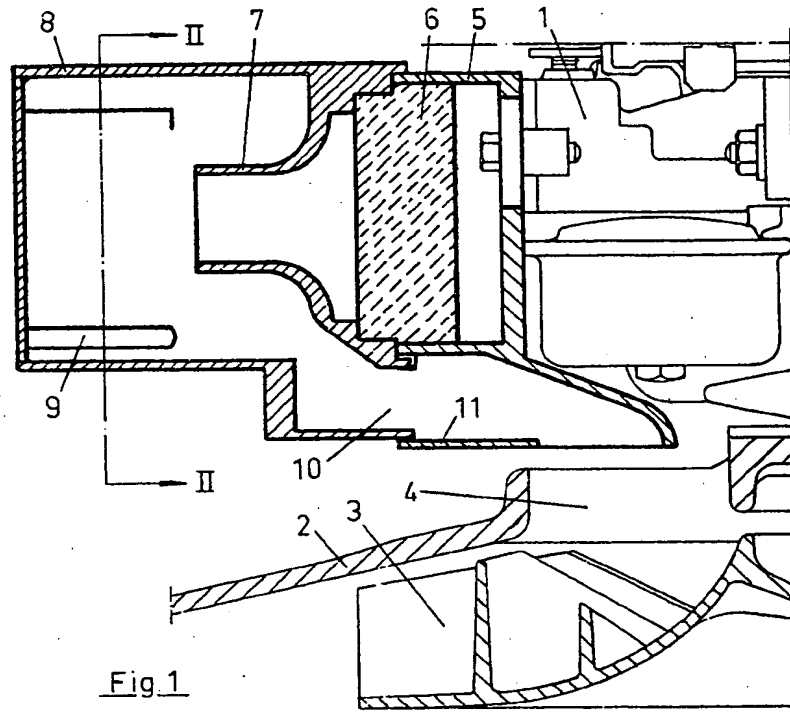
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COMPLETE SPECIFICATION

1 SHEET

*This drawing is a reproduction of  
the Original on a reduced scale.*



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